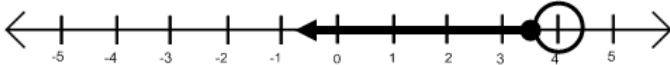
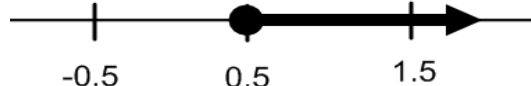


Name: _____ Period: _____ Date: _____

<p style="text-align: center;"><u>Statements of Inequality</u></p> <p>When a and b are real numbers, then</p> <p>$a < b$ say "a is less than b"</p> <p>$a > b$ say "a is greater than b"</p> <p>$a \leq b$ say "a is less than or equal to b"</p> <p>$a \geq b$ say "a is greater than or equal to b"</p> <p>$a \neq b$ say "a is not equal to b"</p> <p>$a = b$ say "a is equal to b"</p> <p>When a variable is present, start with the variable read through the symbol to the number.</p> <p>$x < 4$ say "x is less than 4"</p> <p>$1 > x$ say "x is less than 1"</p> <p>$-3 < x$ say "x is greater than -3"</p>	<p>A number line increases from left to right.</p> <ol style="list-style-type: none"> 1. Draw a number line and label the range. 2. Place a mark on the number: <ol style="list-style-type: none"> a. circle O <i>excludes</i> the number ($<$ or $>$) b. dot • <i>includes</i> the number (\leq or \geq) 3. Draw a line from the number in the direction associated with the symbol <ol style="list-style-type: none"> a. arrow to the left ($<$ or \leq) "<i>less than</i>" b. arrow to the right ($>$ or \geq) "<i>greater than</i>"
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Solve if necessary and then draw the inequality. Write the statement in words "*less than*"

<p>Ex $x < 4$</p> <p>Draw the number line: Use a circle to exclude 4. Point the arrow to the left (decreasing).</p>  <p>The solution for x is all values less than 4.</p> <p style="text-align: center;"><i>"x is less than 4"</i></p>	<p>Ex $x + 3.5 \geq 4$</p> <p>Solve the equation to isolate the variable, x.</p> $\begin{array}{r} x + 3.5 \geq 4 \\ -3.5 \quad -3.5 \quad \text{subtract from both sides} \\ \hline x \geq 0.5 \end{array}$ <p>Now draw on number line. Use a dot to include the number and point the arrow to the right (increasing).</p>  <p style="text-align: center;"><i>"x is greater than or equal to 0.5"</i></p>
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1	$-2 \geq x$	2	$7.5 \leq 3.5 + x$

3	$x < -1$	4	$-2.20 > -0.20 + x$

5	$-25 \leq x$	6	$100 > x - 35$
7	$x < -23$	8	$x + 53 \geq 2(10 - 5)$
9	$-2 \geq x$	10	$x - b > 5$ Solve for x if b = -5
11	$x - b > 5$ Solve for x if b = 10	12	Word Problem
		<p>Marcus left his house with \$20.00. Later he went to a store and purchased some snacks. Use x as the money Marcus has remaining. Write the inequality to represent how much money Marcus might have.</p>	

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How to read inequalities. Start with the variable, read through the symbol to the number.

Correct: $-2 < x$ The variable x is greater than negative two.

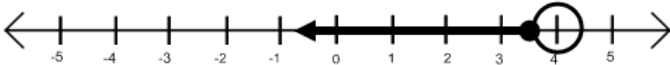
Correct: $4 > (x - 3)$ The difference between x and 3 is less than 4.

Correct: $x \leq -1$ The variable x is less than or equal to negative 1.

Reading is the most common error with inequalities.

Multiplication and Division with a Negative Coefficient	
$-2x < 12$	Solve to isolate the variable x.
Solution $\frac{-2x}{-2} < \frac{12}{-2}$ $x > -6$ <i>x is greater than a negative six.</i>	Division with a Negative Coefficient 1. Divide by -2 to both sides of the inequality 2. Then switch the less than symbol for the greater than symbol .
$10 < -\frac{x}{3}$	Solve to isolate the variable x.
$10 \cdot (-3) < -\frac{x}{3} \cdot (-3)$ $-30 > x$ $x < -30$ <i>x is less than a negative thirty.</i>	Multiplication with a Negative Coefficient 1. Multiply by -3 to both sides of the inequality 2. Then switch the greater than symbol for the less than symbol . 3. Rewrite the inequality with the variable on the left.

Solve if necessary and then draw the inequality. Write the statement in words "*less than* "

Ex	$-4x > -16$ -4 is greater than -16	Draw the Number Line Here
	$\frac{-4x}{-4} > \frac{-16}{-4}$ $x < 4$ Switch the symbol The variable x is less than 4.	$x < 4$  <i>"x is less than 4"</i>

1	$-5x \geq 20$	Draw the Number Line Here

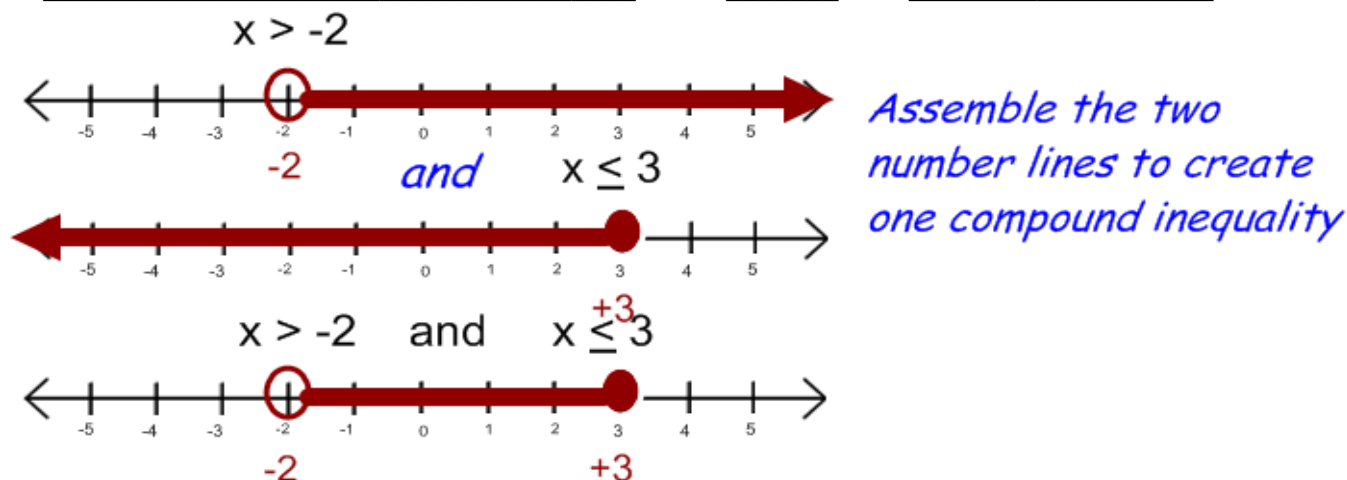
2	$-25x < -100$	Draw the Number Line Here

3	$-\frac{1}{4}x \leq 10$	Draw the Number Line Here

4	$-5 < \frac{-x}{3}$	Draw the Number Line Here

5	$-2x - 1 < 9$	Draw the Number Line Here

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Necessary Terminology	Compound Inequalities Types: "and" & "or"
Inequalities: Circle (excludes) & Dot (includes) Compound Inequalities: "and" & "or" Expression, Coefficient, Constant, Number Line	And $x > -2$ and $x \leq 3$ can be written as a compound inequality $-2 < x \leq 3$ Or $x \leq -2$ or $x > 3$

Draw the Compound Inequality

Ex	$x > -5$ and $x \leq 4$	Draw Number Line Here
$x > -5$ x is greater than -5 $x \leq 4$ x is less than or equal to 4 $-5 < x \leq 4$		$-5 < x \leq 4$

1	$0 < x \leq 6$	

2	$x \leq 0$ or $x > 5$	

3	$x \leq -7$ or $x > -1$	


The **"and" compound inequality** can be written as $-5 < x \leq 4$ which is an abbreviated form of two inequalities connected in this manner $x > -5$ and $x \leq 4$.


How to read this compound inequality $-5 < x \leq 4$.

First hide ≤ 4 and read $-5 < x$ from the variable through the symbol to the number.
"The variable x is greater than negative five."

Second hide $-5 <$ and read $x \leq 4$ from the variable through the symbol to the number.
"The variable x is less than or equal to four."

Write as two separate inequalities and draw on the number line.

4	$-3 < x < 2$	Draw Number Line Here
		

5	$1 \geq x > 5$	
		

Write the compound inequality for the following number lines

6		
